361 Most of the dwellings in Bang Chan flanked the canals that stretched away from the temple area. All houses were in sight of one or more other houses, if not standing side by side. Here and there they formed small hamlets where kinsmen tended 351 to live in proximity. Around the houses were kitchen gardens 245 and threshing floors, and behind them, the fields. Bananas grew abundantly; pineapples, mangoes, and other fruits occasionally. The canals were full of water-vegetables, cultivated or wild, 241 while fish were plentiful. Water sources were the rain, kept 226 in large jars; artificial ponds dug near the houses and fed from ground water; and the canals. No wells existed. The large 312 tile roofs of the temple collected a good deal of rain-water which was available to anyone during the hot season when all water ran low.

General Nutritional Level

146 The population was physically well-formed with few physical [142] deformities evident. There was little obesity or emaciation. The daily diet (cf. Hauck, et al.:passim) consisted of large quantities of rice, with small amounts of fish, meat, vegetables, fruits, spices, and eggs. Food at the not-infrequent festivals [272] was rich in meat, eggs, and sugar. No milk was available except canned imports, and little was used. "Nevertheless, though caloric deficiency ('hollow hunger') was not prominent, over half of a sample of the population inspected medically had one or more signs of malnutrition. Even in a group chosen for research reasons for apparently good nutrition, about one in four had some such sign and in another group, selected for evidence of poor nutrition, two out of three persons had such."[2] The nutritional level in Bang Chan did not always correlate absolutely with economic level, for nutritionally one of the poorest families was found to be one of the best fed because the father did so much fishing and collecting of green canal vegetables. The [178] change-over, some decades ago, from home pounding of rice to [256] steam milling by most families had probably been a major factor in increasing nutritional deficiencies throughout the community.

2. Dr. H.M. Hauck, personal communication, 1959.

534 What differences in circumstances existed that might affect nutritional level? On the one hand were relatively isolated nuclear families, which we estimated as 15-20% of the
434 families, living in tiny separate cottages.[1] Usually with in-
464 adequate or no land, they earned an irregular income by hiring
423 themselves out for farm or other work. At the other extreme,
in a hamlet-like cluster of dwellings, lived a closely affili-
596 ated group of kin. A senior couple more or less headed the
592 married sisters, brothers, or children, maybe with a hired man,
476 or family that as autonomous households cooperated amicably in economic and domestic tasks. We estimated these as 20-25% of the Bang Chan families. The larger social unit, having more hands to produce, and to share tasks, was better able to provide good food and general health care to its members, than a small isolated family. Four problems more easily handled by the larger group were household chores and child-care, farming, borrowing, and earning money.

855 Young children had to be constantly tended lest they fall into the water, the fire, or under the buffalo's feet. They never entered the fields during work. Fishing and gathering of water plants was complicated because in boats, small children had to be held. Where there were but two parents and young children, one parent could not do many things until the other came home. Perhaps neither partner could stay away long
enough to get a big batch of fish or greens from the canal, or
[252] go to the store. Cooking was simplified, or food might be prepared once a day only. Respite came only when the first born was able to help oversee a younger child, sometimes stay-
596 ing home from school to do so. Where the adult cooperative
476 group was larger, movement was freer. All the strong adults could work in the fields or at a job, confident that the home was well tended. They came home to a well-prepared meal, ready when they wanted it. Such households had more fresh fish because farm work could be completed sooner, hence more persons
[871] could devote themselves to fishing. Some physically able members could even be spared and financed to go beyond the required four grades of elementary school.

241 Plowing could be done by a man and wife, but for both
462 transplanting and harvesting which had to be done within a few
476 days, large groups were necessary. Two patterns of auxiliary
464 group labor prevailed: reciprocal cooperative work, and hiring of labor.

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114 1. Janlekha, 1955, categorized families as 5% "one-
162 person," 59% nuclear, 8% limited extended (including one or
594 more parents of a spouse), 27% extended (including dependent
596 married couples or other collateral relatives), and the temple
423 residents. At least 32% of the families had inadequate or no land. His figures do not indicate the degree of domestic cooperation which was an ameliorating factor in well-being.

Seasonal Activities

128 A chart has been prepared to show the climatic conditions in Bang Chan and what people were doing at different seasons (Chart 1). For convenience, the periods covered by the four rounds of the dietary survey (p. 58) are included.

221 The year starts with May, the beginning of the rice-
192 year. At this time the rains began to soften the parched
241 ground, and the heat slackened. School re-opened. Farmers
512 turned to plowing, harrowing, raising the seedlings. Both
871 sexes worked about equally in field labor, boys from 14 and
562 girls from about 15 years of age performing tasks according
to skill and strength. Everyone was in the field at dawn.
The buffalo, but not the farmer, rested through the noonday
heat (about 10 a.m. until 2 p.m.) and also on the weekly holy
264 day. Meals were usually eaten about 10 a.m. and after re-
turning from the field at dark. Although two meals a day
were usual at other times, at this season, some had a third
120 meal about 2 p.m. If the buffalo were brought home to rest,
this meal could be eaten at home, but hired laborers or those
working far from home often took with them rice and other
foods in a (2)pin-(1)too, or tiered lunch kit.

221 With the rains, the canals had filled, so that by June
132 buyers with big rice boats could return. The few farmers who
501 could afford to hold onto a portion of their last year's crop
443 sold it for a better price at this time. Vegetables and
124 fruits which had died in the long drought were replaced, and
trees were planted.

24 In July the heavy transplanting season began. Because
221 of cooperative work habits or hiring out, people worked
192 solidly day after day for two months on their own or on an-
other's fields. It was dawn-to-dark, back-breaking work.

This was an anxious time. The seedlings had to go in at exactly the right time. Water level was only partly con-
312 trollable. Lack of rain might be remedied by pumping water
from the canals but flooding would drown the plants. School
871 vacation was scheduled at this time so both teachers and
857 children could help. Older children might work in the fields,
887 while younger ones, from 8 to 13, and the aged took over the
care of babies and toddlers, fished, cooked, gathered food
433 for the family and grass for the buffalo. People knew the
crop was subject to drought and flood, pests of rats and worms, destruction by birds or wandering buffalo or duck, and in the end to the mysterious fluctuations of the price of rice on the world market. Moreover, some persons worried about debts, acquired from giving a ceremony or making a capital investment and sometimes from heavy gambling during the rest season.

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There was an important psychological difference between
221 the two work seasons. At planting time, people were anxious;
243 at harvest they were happy. People saw cash just ahead, for
439 the crop was now safe. Each host of a cooperative work party
466 gave at least one big convivial feast, the best he could pro-
527 vide and even the hired laborers got a round of liquor. People
461 joked more than usual at work. Two boat loads of workers were observed racing down a canal at 6 a.m., shouting and cheering, although they had probably worked long hours for days or weeks before. Everyone knew that a joyous season was at hand.

221 When the crop was in, the people rested, fished, and be-
224 gan to prepare for big ceremonies demanding organized work.
527 Supplies of fish were needed for preserving or for feasts. Labor and engines were now available, and with water low, fishponds could be conveniently drained, and the fish on the muddy bottom caught. A pond might be drained two or three times a year, but timing was determined by the availability of equipment and workers and by the needs of the annual ceremonial cycle. One pot of fish was given to each helper at a cooperative pond-draining.

221 Most farmers sold their rice in February. Capital was
45 invested in farm equipment, buffalo, housing and ceremonies. Debts were cleared if possible. Cash expenditures for food, which had declined progressively since the beginning of the rice year, reached the yearly minimum, mostly because people had ample time to fish. People also saved up their money if they were sponsoring a ceremony, ate lightly at home if they
[871] were going to one. Since school closed from March 15 to May 1, because of the heat, money was not given to children for snacks.

221 The land dried up and cracked, rainwater for drinking
132 gave out, and some canals were reduced to mud. Cherished
312 plants were kept alive by watering, but no new planting could
241 be done. Buffalo, which at other seasons were confined and
231 fed, now roamed the fields, nibbling stubble. Everyone was busy and happy. Ordinations, weddings, cremations, merit-making feasts and several big holidays came one after another.
796 Of the four New Year's Days observed in Bang Chan, the Buddhist New Year, which because of the lunar calendar fell about mid-April, was the most important, being celebrated over two days with extensive offerings of food to the priests and with other activities. The official New Year's Day, January 1, and the traditional New Year's Day about November 1, had rather
[563] slight observances. Chinese New Year's, in February, was celebrated by the Chinese residents who presented a school teacher and their hamlet headmen each with a boiled chicken and a Chinese sweet. Lent officially closed the ceremonial season, but the advent of plowing-time slowed the pace considerably.

When the rains finally came, the rice year started again.

BANG CHAN

FOREWORD

The Cornell Thailand Project, like other Cornell University studies in community development, is a long term investigation in the field of the processes involved in changing cultural behavior in a non-industrialized society. Field research was begun in 1948 in the central plain of Thailand with base line studies of the rice farming community of Bang Chan and its environs. A collaborating staff of Thai and Americans representing different disciplines has continued to work in Thailand at Bang Chan and elsewhere in a series of phases extending to the present.

The first interim report issued by the Project gives a general account of the economic, political and social organization of Bang Chan in 1948-49 together with some material on health and diet (Sharp et al., 1953). Since the circulation of this first interim report was limited, some of the salient characteristics of Bang Chan should be outlined here.

Bang Chan is located some twenty roadmiles northeast of Bangkok, the rapidly growing major metropolis and capital of Thailand. The village is between two and three miles west of a small district administrative center and market town, Minburi. A century-old canal and to the north of it a post-war hard surface road connect Minburi and Bangkok so that villagers have easy access to these two centers by boat or bus.

In 1954, when data for the present study were still being gathered, the population of Bang Chan was about 1700, divided among about 300 households. Roughly 60 per cent of the households were made up of independent nuclear families consisting of parents and unmarried children. The average size for all families was 5.7 persons. Rice farming was the main occupation of 80 per cent of all families. The population in 1954 worked and lived on about 2800 acres (7000 rai) of land. With the exception of some 120 acres (300 rai) used for the home sites and home gardens scattered along the network of canals in the village, all land was devoted to the cultivation of wet rice. Nutritional density is thus practically the same as population density. Of the rice crop, 60 per cent or more may be sold, the remainder providing seed, feed, and the staple food of the people. During the wet season and into the cooler dry season, from May or June to February, the growing of the single crop of rice is the main activity. The hot dry season from March until the rice planting begins again is a period of fiestas, ceremonies, and visiting.

The Thai countryside is divided into hamlets, each with a headman in charge of the thirty to sixty households of the hamlet. Seven such hamlets constitute the Bang Chan community. (In the Project studies they are identified by the initials BC and KY followed by a number).

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The Innovations

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A. Agricultural Innovations: During the past few years, certain innovations have come to Bang Chan which have increased agricultural productivity and improved the level of living. Some of these innovations are listed below.

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1. The small motor. One innovation is the small engine, gasoline motor, which is used mainly as a water-lifting device for irrigation purposes. In 1950 only five small motors were found in Bang Chan.* Twenty-one per cent of the respondents in the 1955 survey, however, report owning these motors; the majority of the respondents (68 per cent) claim to have used this labor-saving device which is sometimes jointly owned by more than one household and is frequently loaned out.**

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2. Straw mushroom growing. Three years ago the commercial growing of mushrooms in Bang Chan was unknown. By 1955, the practice of growing mushrooms had reached into many homes (44 per cent of the respondents report that they have engaged in this activity***). Even if no mushrooms have ever been grown in a given household, it is still likely that the individuals in it are aware of the practice and have observed it closely through the mushroom growing activities of their friends, relatives, and neighbors (reported in 43 per cent of the households). Only a few households (13 per cent) report that they have never grown mushrooms or have never been exposed to it in this way.

One advantage in the culture of straw mushrooms is that it permits quickly realized returns. The cycle, from sowing spores in moistened straw to harvesting the mushrooms, takes about two to three weeks. Another advantage is that there is relatively little heavy work or investment required besides the acquisition of straw and spores. A third advantage is a ready market, for the plant is sought by Chinese dealers in Bangkok who supply hotels and restaurants. Bang Chan rice farmers who engage in mushroom growing as a sideline activity sell it either to local middlemen or directly to the Chinese in Bangkok.

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[113] * Sharp, L., H. M. Hauck, K. Jamlekha, and R. S. Tuxbay, Siamese Rice Village. A Preliminary Study of Bang Chan. Thailand, Cornell Research Center, June, 1953).

[125] ** The questions: "Do you own a small engine motor or not? (If "NO"): Have you ever made use of one in your work?"

[125] *** The question: "Have you ever grown mushrooms, or not?"

3. Tilapia raising. In 1951, FAO suggested to the Thai Government that cultivation of tilapia be encouraged to help meet the rising need for fish in Thailand. Tilapia is a species of fish which multiplies and grows relatively fast. The strain, which came originally from Africa, is popular in Malaya and was expected to be easily marketable, thus a source of added income in Thailand. The Thai Government followed the FAO suggestion in 1952: a few Bang Chan residents dug the special pools required for the fish culture and began to raise tilapia mainly for commercial purposes. About a third (31 per cent of the households*) reported in 1955 that they have engaged in this activity. 177* 178* 228

From discussions with the people it appears that they are learning by trial and error to raise tilapia. Though fish culture is, for them, mainly a sideline activity, nevertheless, it requires the building of a special dam, care in preventing other fish from devouring young tilapia and maintaining the appropriate balance of fresh water in a given pool. The loss resulting from the fish dying or being eaten by others is relatively high. Although tilapia multiply rapidly, the cash return is not as great as that realized from mushroom growing. The cycle of raising tilapia lasts about four months. [434]

4. Artificial fertilizer. Artificial fertilizer has made its appearance in Bang Chan only recently. Informants in the community reported that only two farmers had tried artificial fertilizer in 1952. In the 1955 survey, 12 per cent of the farmers reported that they have used fertilizer or are using it. This fertilizer is mainly ammonium sulphate sold both by the government and commercial distributors. Only a few farmers (3 per cent) have ever employed it for all, or for the larger part of their fields. The remainder (9 per cent) have used it on a trial basis in only a small part of their fields.** 241* 177* 178*

Fertilizer, then, has been tried out on a much smaller scale than either mushroom growing or raising tilapia. Apparently two important barriers operate against its wider acceptance. First, its high cost and the difficulty of purchase and transportation (66 per cent of farmers with ideas on the subject gave these reasons for not using fertilizer); second, popular opinion in Bang Chan declares that artificial fertilizer is not fit for low lands since it washes away and is thus wasted (29 per cent of the farmers with ideas on the subject advanced this as reason for not using fertilizer). In addition, fertilizer yields delayed returns.

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* The question: "Have you ever raised tilapia, or not?" [125]

** The question: "Have you ever used fertilizer or not? .. To what extent have you used fertilizer on your fields?" [125]

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743 *177 *178 B. Institutional Care of the Sick: Equally important as agricultural innovations in raising the level of living of an area such as Bang Chan are the efforts to improve the health and welfare of the population. Since the thirties there has been a clinic in the neighboring market town of Minburi and some Bang Chan farmers used clinics and hospitals in Bangkok before that time. Only about a third (36 per cent) say they have never been to a clinic or a hospital; over a third (37 per cent) have themselves gone for treatment; about one fourth (23 per cent) report having brought a patient there; over one tenth (12 per cent) say they visited relatives there; and a few (3 per cent) say they went there for various other reasons.*

ANALYSIS OF DATA ON AGRICULTURAL INNOVATIONS

121 The central question to which the present analysis directs itself is: What are some of the factors which may be said to account for the fact that certain members of the community are willing to try out these innovations and to continue using them, while others are unwilling even to make the initial attempt? Is there some general pattern to be discerned among the several innovations? Is there any discernible clustering among them; that is, are some community members more "innovation-minded" than others, in the sense that if they try out or accept one innovation they are more likely to accept another? Or are these innovations accepted independently of each other? The following analysis of the survey responses attempts to shed some light on these and related problems.

Factors in Acceptance of Agricultural Innovations

* 241 402 *177 *178 Use of the small motor is basic to acceptance of other agricultural innovations. Although only a minority of the persons of Bang Chan report that they own a small motor, many more used this machine through joint ownership or borrowing. Indeed, knowing whether a person owns or uses such a motor is a useful indicator of his readiness to accept other agricultural innovations. If he owns or has used a motor, then he is about five times more likely than others to try fertilizer, about two and a half times more likely to try raising tilapia, and about one and a third times more likely to try straw mushrooms.

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[125] * The question: "Have you ever been to a clinic or hospital...? In what various places...? For what various purposes did you go ...?"

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TABLE 1. THOSE WHO OWN OR USE SMALL MOTOR ARE MORE LIKELY THAN OTHERS TO TRY OTHER AGRICULTURAL INNOVATIONS (FARMERS ONLY)

	Owns motor	Does not own motor but uses it	Neither owns nor has used motor
(Total cases)*	(70)	(150)	(105)
Have you ever used fertilizer?**			
Yes	18%	16%	3%
No	82	84	97
Have you ever raised tilapia?			
Yes	53%	29%	22%
No	47	71	78
Have you ever grown mushrooms?			
Yes	48%	49%	37%
No	52	51	64

* The bases on which per cents are computed appear in parenthesis at the head of each column in this and subsequent tables. Actually the bases vary by a few cases, table to table, since there were always a few respondents who did not answer a given question or whose answers were unclassifiable. [125]

** Asked of farmers only. The bases are:

Owns motor	65
Does not own motor but uses it	141
Neither owns nor has used motor	82
NA	3

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There is some evidence, then, that if a person is willing to try out one agricultural device, such as the motor, he is more likely to try out other agricultural innovations. However, this "clustering" cannot support the hypothesis that there is something like "innovation mindedness" in general, or that acceptance of any innovation in a series is predictive of acceptance of all other innovations in the same series.

Evidence may be cited to substantiate this contention. In the first place, if such a clustering indeed prevailed, one would expect users of any of these agricultural innovations to be more disposed than others to use, as well, certain non-agricultural innovations, such as hospital or clinic facilities, for example.

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228 And no such tendency may be discerned in the present data. (See Table 2.)

• 241 TABLE 3. USERS OF HOSPITAL AND CLINIC FACILITIES SHOW NO SIGNIFI-
244 CANT DIFFERENCES IN RATES OF ACCEPTANCE OF AGRICULTURAL
743 INNOVATIONS
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Agricultural Innovations	Percentage who have ever gone to hospital or clinic for treatment	Total cases
Mushrooms		
Tried them out	36%	(143)
Never did	38	(186)
Tilapia		
Tried it out	44%	(104)
Never did	34.	(223)
Motor		
Tried it out	37%	(215)
Never did	34	(106)
Fertiliser*		
Tried it out	37%	(32)
Never did	34	(232)

* Farmers only

228 In the second place: use of the motor is much less strongly
241 linked to use of mushrooms than the use of fertiliser or tilapia.
It may well be that there may be some common factor strongly under-
244 lying the decision to use the motor on the one hand, fertiliser and
402 tilapia on the other, while the decision to try mushroom-growing
*177 is relatively more "autonomous". A possible explanation for the
*178 greater "autonomy" may be sought in the differential requirements for growing mushrooms compared with the requirements for adopting the other innovations.

Both tilapia and sulphates demand extra heavy work, care, an essential initial investment, and willingness to wait for a delayed return. An additional requirement for a successful and continuous pay-off from both these innovations may be an aptitude to follow rather complicated instructions. In the case of mushroom growing, however, the initial investment is relatively small, the labor may be tedious but is not heavy, no protracted or complicated care is involved, and the results of the effort are relatively quickly realizable.

6: Goldsen and Ralis Z-4.5 (1955) 1957
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There is some justification, then, for the inference that initial adoption of innovations such as fertilizer and tilapia, which require increased labor, will depend to some extent upon the availability of some labor-saving device (such as the small motor) which will enable the busy farmer to perform the necessary labor and, perhaps, leave him freer to exercise the care required for these innovations to be successful. Hence the relatively stronger relationship among these innovations. An innovation which does not make these demands, however (such as mushroom growing), is more likely to find acceptance on its own terms and may thus be less dependent for its acceptance upon availability of some sort of labor-saving device.

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Innovation and Attitude Towards It

There is further evidence in the survey substantiating the greater "autonomy" so to speak, of the decision to try mushroom culture compared with the decision to try fertilizer or tilapia.

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The present study tested the hypothesis that use of these innovations would be related to a favorable attitude toward them. Attitude toward the four innovations was determined by examining responses to the questions: "What is your opinion about fertilizer?" "...about mushroom growing?" "...about tilapia?" Responses were classified according to whether they revealed positive, mixed, or negative affective feelings to each of the innovations.

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In general, positive attitudes towards all these innovations are widespread in Bang Chan. About three-quarters of the residents express positive feelings toward mushroom growing and over half express positive attitudes to artificial fertilizer and tilapia raising. (See Table 3.) None of these innovations elicits widespread expressions of disfavor, although the respondents are more likely to express an unfavorable attitude to tilapia (29 per cent) than to fertilizer (14 per cent) or to mushrooms (7 per cent)

TABLE 3. THE MAJORITY IN BANG CHAN HOLD POSITIVE ATTITUDES TOWARDS AGRICULTURAL INTRODUCTIONS

Attitude	"What is your opinion about..." Mushrooms	Fertilizer	Tilapia
Positive	78%	39%	37%
Neutral or mixed*	6	3	3
Negative	7	14	29
No opinion	9	16	8
Not ascertainable	2	8	4
Total cases	(333)	(333)	(333)

* The neutral or mixed attitude category comprises responses conveying partly favorable and partly unfavorable feelings such as, "some kind is good, some kind is not so good"; "in some ways I like it, in some ways I dislike it."

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228 Now let us examine the extent to which the decision to try out
*241 the innovation is linked to a positive feeling towards it. The decision to try fertilizer and to raise tilapia turned out to be indeed linked with positive feelings towards these innovations. Among those favoring fertilizer, the proportion using it is six times as high as those with neutral, mixed or negative attitudes (18 versus 3 per cent); among those with positive attitudes to tilapia raisers of this fish are twice as frequent in comparison with those having neutral, mixed, or negative attitudes (43 versus 22 per cent). These relationships are shown in Table 4 below.

TABLE 4. ATTITUDES TO FERTILIZER AND TILAPIA RAISING ARE LINKED TO THEIR USE

	Attitude	
	Positive	Neutral, Mixed & Negative
Fertilizer		
Tried it out	18%	3%
Never did	82	97
Total cases*	(168)	(55)
Tilapia		
Tried it out	43%	22%
Never did	57	78
Total cases	(191)	(104)

[125] * Based on responses made by 293 farmers who expressed a codable attitude to fertilizer.

244 On the other hand, the data revealed no relationship between
*177 attitude to mushroom growing and growing them. The proportion of
*178 users and former users among those who have favorable attitudes and those who have negative attitudes remains relatively constant. Table 5 shows that among respondents with positive attitudes, 47 per cent have tried mushroom growing; while among respondents with negative attitudes, 42 per cent have done so; percentage differences are statistically insignificant.

TABLE 5. ATTITUDES TO MUSHROOM GROWING SHOW NO RELATION TO ITS ADOPTION

	Attitude	
	Positive	Neutral or Negative
	(252)	(41)
Tried mushrooms	47%	42%
Never did	53%	58%

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It appears, then, that we may be dealing with two types of innovations, one type (fertiliser and tilapia) where attitude is linked to decision to use it and another (mushrooms) where attitude seems to be unrelated to such use.* And here again may be further substantiation of the greater autonomy of the acceptance of mushroom growing. For, in the case of innovations such as artificial fertiliser and tilapia, it is known that they require investment of funds and labor, risk, delayed return, and departure from well-known ways. It could be that in the face of these disadvantages acceptance will occur only if motivation is high. Acceptors would then be selected mainly from among those who have high motivation and accompanying positive affective feeling. Those who do not have these feelings would, following this reasoning, be less likely to overcome their objections to the disadvantages of the innovation in question.

There is also the second type of innovation like mushroom growing. This innovation is much less "costly" not only of funds but effort. Hence, high motivation and accompanying positive affect might be less influential than other factors--factors quite aside from the crop itself--on acceptance of this type of innovation. Consequently, growers of mushrooms may be recruited equally from persons with favorable attitudes and less favorable attitudes towards this crop.

These findings suggest the more general hypothesis (which might be corroborated by analysis of related contextual data collected in Bang Chan, and by examining equivalent situations in other underdeveloped areas) that: the more complex the innovation, the more effort involved in employing it, the more risk involved, and the less immediate the return, the greater the likelihood that acceptors will be recruited from a selected group of highly motivated people, rather than at random among all persons "eligible" to accept it. If the innovation requires the high motivation which is needed to overcome the disadvantages of investment, work, risk, and rarity, then this attitude toward it is important. If the innovation demands only short-term investment and relatively light labor, then this motivation is of little importance in the decision to try it.

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Sociological Factors in Agricultural Innovation

The decision to use the small motor, once made, tends to accelerate the decision to try out other agricultural innovations, especially fertiliser and tilapia and, to a lesser extent, even mushrooms.

* Both mushroom growing and tilapia raising are sideline activities to the Bang Chan rice farmer and are, therefore, comparable in this respect.

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228 mushrooms. The following section searches for sociological factors
241 linked to these decisions. For example, are the well-to-do farmers* more apt than the less well-to-do to adopt agricultural innovations?
244 To what extent is literacy a factor in acceptance of innovations? To what extent do differences in literacy, communications habits, cultural contacts and urban orientation account for tendencies to adopt or reject these changes?

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[125] * The following analysis has been made, in most cases, for male farmers only. The distribution of initial acceptance among the three groups of male farmers, females, and male non-farmers is given in the following table.

*179
*178 TABLE 6. USE OF AGRICULTURAL INNOVATIONS AMONG THREE GROUPS OF BANG CHAN VILLAGERS

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	Male Farmers (211)	Male Non-farmers (62)	Females (32)
Tried motor	71%	61%	48%
Didn't try	29	39	52
Tried mushroom growing	44%	35%	41%
Didn't try	54	65	59
Tried tilapia raising	35%	25%	31%
Didn't try	65	75	69
Tried fertiliser	15%	5%	**
Didn't try	85	95	

** Asked of farmers only.

It is apparent, as one would expect, that it is mainly the farmers who try these innovations. Relatively few women (with the exception of tilapia raising) and even fewer non-farmers say they have tried them. Since the absolute number of acceptors among women and non-farmers is too small to bear the separate treatment which would be essential to analyse the factors influencing the use or non-use of innovations, they have been excluded from the following presentation, which refers, thus, to male farmers only.

Economic level

It could be, of course, that people on a higher economic level are in a better position to try agricultural innovations, since they might more easily afford not only an initial cost but also possible loss in trying out something new.

The survey data provide several indicators of economic level. Among other questions on this subject, all respondents were asked: "Here in your household how many buffaloes do you own?" About one-quarter reported owning no buffaloes at all; a little more than that proportion reported owning four or more; the median number of buffaloes reported was between two and three.

In Bang Chan buffalo are an indication of wealth, as is the amount of land planted to rice. Thus all farmers in the sample were also asked, "Last time you planted rice, how many rai* of rice did you plant?" About a third reported that they planted 19 rai or less; about one-fourth reported that they planted 40 rai or more; the median number of rai reported was 26.3.

If the reported number of buffalo owned is an adequate measure of economic level, then one would expect a high correlation between reported buffalo ownership and reported number of rai planted. If the expectation is borne out by the survey data the two indices may be used interchangeably. (Table 7 reports this relationship for the male farmers in the sample.)

TABLE 7. FARMERS# WHO OWN MORE BUFFALOES ARE MORE LIKELY TO CULTIVATE LARGER LAND HOLDINGS

"...how many buffaloes do you own?"

	Four, one or two (99)	Three or more (112)
"...how many rai of rice did you plant?		
Less than 9	31%**	11
10-19	32	7
20-29	18	27
30-39	15	33
40-or more	3	41

Male farmers only
** Percentages may add to 99 or 101 owing to rounding of figures.

* A Thai land measure; 1 rai = 0.4 acres.

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556
*177
*178
228
231
241
244
434
402
556

Decisions to use all these innovations--with the possible exception of the use of fertilizer--seem to be more widespread among the upper economic levels of the population. (See Table 8.) One wonders whether the initial link between use of the motor and readiness to try the innovations may actually disguise a more basic relationship based simply on ability to afford the investment and the risk.

TABLE 8. FARMERS* ON HIGHER SES LEVELS ARE MORE LIKELY THAN OTHERS TO HAVE USED THE MOTOR, TO HAVE GROWN MUSHROOMS AND TO HAVE RAISED TILAPIA

	Ownership of Buffaloes	
	2 or less (99)	3 or more (112)
Used motor		
Own	6%	37%
Use	53	45
Neither	41	18
Grew mushrooms		
Yes	30%	60%
No	70	40
Raised tilapia		
Yes	26%	42%
No	74	58
Used fertilizer		
Yes	12%	17%
No	78	83

* Male farmers only

The following table presents again the initial relationships between use of motor and readiness to try out other innovations. But this time the link is examined separately for persons on the different economic levels.

Table 9 was made by first dividing the population into two groups, those from high and those from low economic levels. The resulting two groups were then further subdivided on the basis of whether they owned (or used) a motor or whether they did not. In each of the four resultant groups the percentage that raised tilapia was then calculated. Thus among those of high economic level who own or use motors, 45 per cent raised tilapia, and we infer that 55 per cent did not raise tilapia. The same procedure was repeated to ascertain the percentage that has tried fertilizer and subsequently the percentage that has tried mushroom growing.

This table shows that in tilapia raising both factors operate independently and cumulatively, i.e. people who are better off economically and who also own or use the motor are almost two and a half times as likely to raise tilapia as their economically depressed counterparts who neither own nor have access to the motor. (45 versus 17 per cent respectively.)

The link between use of the motor and attempt to try fertiliser holds regardless of economic level.

The initial link between ownership or use of the motor and growing of mushrooms, on the other hand, is shown to be a conditional one. Those on a higher economic level are more likely than others to try mushroom growing, whether or not they own or use a motor. Those on the lower economic level, with access to a motor are more likely to take up tilapia culture.

TABLE 9. RELATIONSHIP OF USE OF MOTOR AND OTHER INNOVATIONS TO ECONOMIC LEVEL

	Economic Level	
	High*	Low**
Owns or used motor (Proportion who have raised tilapia)		
Yes	45% (89)	33% (57)
No	25 (21)	17 (40)
Owns or used motor (Proportion who have tried fertiliser)		
Yes	20% (89)	10% (57)
No	5 (21)	* (40)
Owns or used motor (Proportion who have tried mushroom growing)		
Yes	60% (89)	36% (57)
No	57 (21)	23 (40)

* Three buffaloes or more
** Two buffaloes or fewer

[231]

Literacy

One important hypothesis to account for differential acceptance of innovations is that the decision to try them out is aided by exposure to the available sources of information. If this were indeed the case, then users of these innovations will be more apt to be able to read and write than be illiterate.

Literacy was determined by asking each respondent whether

he could write, could only sign his name, or could do neither.* Those who said they could write a letter are considered here to be literate. All others are grouped together as illiterates or on a low level of literacy.

The literacy rating was tested for validity as follows: in Bang Chan literacy is known to be related to age. Ever since 1935** there has been a school in the community. Since that date school attendance has been compulsory. Attendance has been fairly full for the last twenty years, but most older residents have never had the opportunity for formal schooling.

The survey data reflect this correlation between literacy and age. Among farmers under 40 years of age, only 16 per cent were rated as illiterate or barely literate by the survey criterion; while 59 per cent of those of 40 years or older are rated as illiterate. Thus one can have reasonable confidence in the survey response as a rating of literacy.

TABLE 10. LITERACY OF FARMERS DECREASES WITH AGE

	Age	
	Under 40 yrs.	40 yrs. or more
Literacy		
Illiterate	16%	59%
Literate	84	41
Total cases	(79)	(131)

Literacy is linked discernibly to acceptance of the motor and mushroom growing. The proportion of literate farmers who have tried the motor is twice as high as the corresponding proportion among those who are illiterate. It is less strongly linked to the decision to grow mushrooms, and is, at best, weakly linked to the decision to raise tilapia or to use fertilizer.

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* In addition, interviewers asked respondents who said they could write to demonstrate it by writing something on the questionnaire.

** See Siamese Rice Village, 22. cit.

TABLE 11. LITERATE FARMERS* ARE MORE LIKELY TO HAVE USED THE MOTOR AND TO HAVE TRIED MUSHROOM GROWING

	Illiterate (Cannot write a letter) (92)	Literate (Can write a letter) (118)
Motor		
Own	16%	26%
Use	35	60
Neither	48	14
Mushrooms		
Have tried	38%	53%
Have not	62	47
Fertilizer		
Have used	12%	17%
Have not	88	83
Tilapia		
Have tried	29%	39%
Have not	71	61

* Male farmers only

If Bang Chan were like certain areas of the United States and Europe, it might be objected that such a relationship between acceptance of innovations and literacy reflects a spurious link with economic level: that illiterates tend to come from the economically deprived strata of the population; hence an observed relationship with literacy may actually reflect the initial correlation with economic level. In Bang Chan, however, this is not the case. A Bang Chan farmer who is well-to-do is as likely to be illiterate as literate, as is illustrated by the table below.

TABLE 12. LITERACY AND ECONOMIC LEVELS ARE UNRELATED IN BANG CHAN*

	Literacy	
	Low (91)	High (119)
Economic Level		
Low	48%	36%
High	52	64

* Male farmers only

Hence the correlation between use of innovations and literacy may be taken at face value and does not reflect a spurious link with economic level.

Communications Media

177 178 207 546

With the increasing use of mass communications, the community member is exposed to sources of information other than the printed word. Ownership of radios has nearly tripled in about five years (in the 1955 survey radios were reported in 14 per cent of the households, whereas in 1949* only 5 per cent of the households reported owning a radio). Quite apart from ownership, radio listening is widespread; less than one-fifth of the people in Bang Chan claim they never listen to the radio (18 per cent). Motion pictures are also popular. Only one-tenth claim to having never attended a movie, while half (49 per cent) say they have seen motion pictures more than ten times.

There is, of course, a strong relationship between exposure to one of these media and exposure to the other. Table 13 below indicates that the majority (64 per cent) of respondents who listen to the radio likewise report frequent movie attendance. Similarly, the majority (67 per cent) of those who say they never listen to the radio, reported that they go to movies rarely or never.

TABLE 13. EXPOSURE TO RADIO AND MOVIES SHOWS HIGH INTERRELATION

	Radio Listening		
Movie Attendance	High Exposure (regular or occasional listeners) (111)	Low Exposure (listen seldom) (148)	No Exposure (60)
High exposure (10 times or more)	64%	32%	12%
Medium exposure (4 to 9 times)	19	17	21
Low Exposure (0 to 3 time)	16	51	67

402 241 228 244

Exposure to the communications media is strongly linked to acceptance of a basic innovation such as the motor. It is not directly linked to acceptance of the other agricultural innovations (fertilizer, tilapia, mushrooms). Respondents who report frequent exposure to radio listening and motion picture attendance are significantly more likely than others to say they own or have used the motor. (Among daily radio listeners 88 per cent report use of the motor; and this proportion declines steadily until among those who never listen, only 46 per cent use the motor; for movies, the corresponding proportion of users ranges from 76 to 36 per cent.)

* Rimmer Rice Villages, op. cit.

178*
369
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264
484
546

TABLE 16. INHABITANTS WHO HAVE ADOPTED URBAN EATING PATTERNS ARE MORE LIKELY THAN OTHERS TO BE EXPOSED TO MASS COMMUNICATIONS AND URBAN CONTACTS

	Eating Pattern	
	With hands (342)	With fork and/or spoon (84)
Listens to radio		
Regularly (daily)	10%	25%
Occasionally	17	28
Seldom	31	35
Never	22	10
Has seen a movie		
Ten times or more	40%	72%
4 - 9 times	19	17
1 - 3 times	28	10
Never	13	1
This past year, how many times did you go to Bangkok?		
None	26%	7%
Once	18	13
2 - 4 times	29	23
5 or more times	28	55

178*
369

When acceptance of urban influences is measured even on the basis of this index, the evidence is clear that it is linked with acceptance of the agricultural innovations. Those responsive to urban influence are twice as likely as others to use fertiliser (21 per cent versus 9 per cent), one and a half times as likely to grow mushrooms (57 per cent versus 39 per cent), and one and a quarter times as likely to use a motor than the others (82 per cent versus 61 per cent). There is no noticeable relationship, however, between tilapia raising and responsiveness to urban influences. The respective proportions are shown in Table 17.

[241]
[244]
[402]
[228]

These relationships between acceptance of urban patterns and decision to use certain innovations remain constant for those on high as well as low economic levels and also for the literate as well as illiterate farmers.

[212]
[434]

TABLE 17. VILLAGERS RESPONSIVE TO URBAN PATTERNS ARE MORE LIKELY THAN OTHERS TO USE AGRICULTURAL INNOVATIONS

Agricultural Innovations	Eat with fork and/or spoon	Eat with hands
Artificial fertilizer		
Tried it	21%	9%
Never did	79	91
Total cases*	(69)	(218)
Mushrooms		
Tried growing	57%	39%
Never did	43	61
Total cases	(84)	(242)
Small engine motor		
Own one or have used it	82%	61%
Never did	18	39
Total cases	(84)	(242)

* For farmers only; excludes all non-farmers

TABLE 18. ACCEPTANCE OF URBAN PATTERNS IS LINKED TO ACCEPTANCE OF MOTOR AND MUSHROOM GROWING, IRRESPECTIVE OF ECONOMIC AND LITERACY LEVELS

	Economic Level				Literacy Level			
	Low		High		Illiterate		Literate	
Acceptance of urban patterns	(Proportion who used motor)							
Eat with hands	53%	(77)	76%	(73)	47%	(73)	83%	(76)
Fork or spoon	75	(20)	89	(34)	69%	(16)	90	(38)
	(Proportion who tried mushroom growing)							
Eat with hands	28%	(77)	58%	(73)	38%	(73)	47%	(76)
Fork or spoon	45	(20)	65	(34)	44	(16)	66	(40)
	(Proportion who used fertiliser)							
Eat with hands	11%	(77)	13%	(73)	10%	(73)	14%	(76)
Fork or spoon	19	(20)	26	(34)	3	(16)	23	(40)

6: Goldsen and Rallis Z-4.5 (1955) 1957
AO7 Central Thai AO7

Contacts Outside the Community

Radio and movies provide indirect contact between the community and the outside world and seem to encourage the acceptance of urban behavior patterns. (See Table 18.) In addition, however, there is direct contact between the community and the capital city. The inhabitants commute to Bangkok to sell their products or to visit. Some go to the city to live for a time, to attend the city's schools, to work as laborers or to serve in the military or police force. For example, about a quarter of the sample (26 per cent) reported that during the year preceding the survey they had been to Bangkok ten or more times. About a third of the sample (35 per cent) have lived in Bangkok, mostly for the purpose of working there. On the other hand, almost half the sample (45 per cent) have never been to the Don Muang Airport; and over two-thirds (69 per cent) have never been to the Annual Agricultural Fair.

One would expect that such direct exposure to the urban life and values of the capital city, for example, might be linked with greater readiness to try out improved methods of agriculture either because exposure to urban life may mean exposure to more information, or, less directly, may mean exposure to the urban values of economic self-advancement and experimentation. And there is, indeed, a relationship between exposure to the capital city and use of the motor. The two factors are not linked for all the residents--the relationship is a conditional one. That is, it is mainly among illiterate farmers where urban contact is associated with readier acceptance of the motor.

TABLE 19. ILLITERATE FARMERS* WHO HAVE GREATER CONTACT WITH THE CITY ARE MORE LIKELY THAN OTHERS TO USE THE MOTOR

"This past year, how many times did you go to Bangkok...?"

Literacy	Never or once (Proportion who own or use the motor)		Twice or more (Proportion who own or use the motor)	
Illiterate	44%	(40)	58%	(31)
Literate	83	(36)	88	(83)

* Male farmers only

In the same way, there is a similar conditional link between use of the motor and wider contacts beyond the horizons of Bang Chan. Visits to the airport and to the agricultural fair, for example, (both centers of contact with urban culture) are associated with use of the motor among illiterate farmers. If the farmer can read and write, on the other hand, he is just

*178
212
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402
484

as apt to adopt the motor irrespective of whether he has been in contact with urban culture.

TABLE 20. ILLITERATE FARMERS* WITH WIDER CULTURE CONTACTS ARE MORE LIKELY THAN OTHERS TO USE THE MOTOR

	Illiterate (Proportion using the motor)		Literate (Proportion using the motor)	
Trips to the airport				
None	38%	(40)	86%	(35)
One or more	63	(49)	86	(83)
Visits to the agricultural fair				
None	50%	(67)	83%	(76)
One or more	57	(24)	88	(43)

[562]
[241]
[228]
[244]

*Male farmers only

However, no such relationship was discerned between these culture contacts and trying out either fertiliser, tilapia, or mushrooms.

*178
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433

Here again, is evidence to support the hypothesis that contacts with urban culture may act as a substitute for literacy in making the farmer more sophisticated about improving his standard of living and level of production. But the data show that such exposure need not result from direct physical contact with urban centers; it can, instead, be a result of indirect contact. Direct physical contact with urban culture, it turns out is effective in increasing the incidence of acceptance of the more complex innovations only for the illiterate farmers of Bang Chan.

*178
121
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572

Friendships

The same reasoning which would lead one to expect a higher incidence of acceptance of innovations among those directly exposed to urban contacts would lead to the companion hypothesis: that inhabitants who have a greater degree of internal contacts with their friends and neighbors might tend to try out innovations to a greater extent than those who remain relatively aloof from such social contacts.

[402]
[228]
[241]
[244]

The data show that such contacts have a limited connection with acceptance of innovations. The incidence of motor use and tilapia raising is higher, it is true, among persons who report a wider sphere of social circulation; but there is little relation between social contacts and willingness to try out fertiliser or mushrooms.

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241 •
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[125]

TABLE 21. INCIDENCE OF MOTOR USE IS HIGHER AMONG VILLAGERS WHO REPORT WIDER SOCIAL CONTACTS

	Social Contacts ("...Do you have more close friends than most people around here, or about the same as most people around here, or fewer close friends than most people around here?")	
	"More" or "the same" (143)	"Fewer" (55)
Motor		
Has used it	77%	35%
Never did	23	65
Tilapia		
Has tried it	39%	21%
Never did	61	79
Fertiliser		
Has used it	16%	11%
Never did	84	89
Mushrooms		
Has tried them	49%	40%
Never did	51	60

Once again, however, when this link between breadth of social contacts and use of the innovations is examined separately for the literate, compared with the illiterate farmers, we find further substantiation of the previous finding that under certain circumstances contact may act as a substitute for literacy in acceptance of complex innovations. For, although the link between social contacts and use of tilapia remains constant for literate as well as illiterate farmers, it is mainly for those who are illiterate that exposure to wider local social contacts is associated with greater incidence of motor use.

[212]

admit in response to a direct question* that they have a debt. Confidence in the validity of these responses as an index of indebtedness is increased since the expected correlation between indebtedness and ownership of buffalo is reflected in the survey data.

TABLE 23. INCIDENCE OF REPORTED DEBT IS HIGHER AMONG VILLAGERS WHO REPORT OWNERSHIP OF MORE BUFFALOES

	Reported Ownership of Buffaloes		
	None (81)	One to three (155)	Four or more (97)
"...Do you now have a debt?			
Yes	49%	36%	69%
No	51	64	31

When the use of agricultural innovations is examined for those farmers who say they have a debt, compared with those who deny it, it becomes apparent that there is a relationship only between indebtedness and use of the water buffalo but not with any of the other mentioned innovations. Seventy-nine per cent of the male farmers who said they have a debt own or use the water buffalo; among those who claim they have no debt the proportion owning or using the water buffalo is significantly less (60 per cent).

TABLE 24. INCIDENCE OF MOTOR USE IS HIGHER AMONG FARMERS WHO REPORT INDEBTEDNESS

	"...Do you now have a debt?"	
	Yes (125)	No (215)
Water buffalo		
Has used it	79%	60%
Never did	21	40
Tilapia		
Has tried it	37%	33%
Never did	63	67
Fertilizer		
Has used it	16%	16%
Never did	84	84
Mushrooms		
Has tried them	45%	48%
Never did	55	52

*Male farmers only

* The question: "...I'd like to ask about a problem common in rural places all over the world. Do you now have a debt or not?" Janlekha's M.S. thesis, ibid., reports a similar distribution of indebtedness for his sample of 96 farmers.

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TABLE 26. INCIDENCE OF HOSPITAL AND CLINIC VISITS IS SIMILAR FOR ALL AGE GROUPS

Have you ever been to a clinic or a hospital?	20-29 (41)	30-39 (30)	40-49 (33)	50-59 (30)	60 or over (37)
No, never	31%	31%	36%	37%	41%
Yes, for treatment	39	44	39	31	33
Yes, for other reasons	29	25	25	32	26

*178
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562

If the responses reflect primarily the need for medical care, women who bear children have a greater need for medical care than men, and one would therefore expect hospital use to be higher among women than men. But again, this hunch is not clearly borne out by the results.

TABLE 27. INCIDENCE OF HOSPITAL AND CLINIC USE IS SIMILAR FOR MEN AND WOMEN

Have you ever been to a clinic or a hospital?	Women (90)	Men (143)
No, never	41%	35%
Yes, for treatment	31	39
Yes, for other reasons	28	26

There is, thus, reasonable justification for inferring that reported use of clinics or hospitals reflects predisposition to use modern health facilities and not simply a need for medical care.

*178

Economic Level

• 241
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Although higher economic level was linked to the principal agricultural innovations, it is not related to use of hospital or clinic facilities.

Literacy

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On the other hand, just as literate persons were more disposed to use the major innovations (p. 19), in the same way those who can read and write report a greater incidence of hospital or clinic use.

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*241
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Use of Health Facilities and Other Factors Associated With Agricultural Innovations

Although use of the basic agricultural innovations was shown to be linked to breadth of contacts within the community, on the one hand, and to indebtedness, on the other hand, the association between these factors and use of modern health facilities, although showing the same tendency, is not statistically significant. For the sake of completeness, the figures are reported below:

TABLE 34. NO RELATIONSHIP BETWEEN INDEBTEDNESS OR INTERNAL SOCIAL CONTACTS AND USE OF HOSPITALS AND CLINICS

	"Have you ever been to a clinic or a hospital?"			
	No, never	Yes, for treatment	Yes, for other reasons	Total 100%
Social Contacts				
"More friends"	31%	27%	34%	(61)
"The same"	40	35	25	(134)
"Fewer friends"	32	41	27	(94)
Do you now have a debt?				
No	40%	33%	28%	(140)
Yes	32	41	26	(192)

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SUMMARY

1. In the community of Bang Chan in Central Thailand, various factors are studied statistically in order better to determine the conditions of acceptance of selected agricultural innovations and conditions for using the facilities of modern medicine in clinics and hospitals. Four agricultural innovations were selected, viz. gasoline motor, raising of fish (tilapia), use of fertilizer, and mushroom culture.

2. The present study was concerned with the initial adoption or trial of innovations, rather than the continuing use of these innovations or the merging of the new with the old features of the culture.

3. While adoption of the gasoline motor was associated with all other agricultural innovations, no generalized acceptance of the new was found because: a) adoption of the gasoline motor bore little or no relation to use of non-agricultural innovations such as hospital and clinic facilities; and b) adoption of gasoline motors was only weakly associated with raising of mushrooms.

4. A cluster of traits including high motivation and sizable capital outlay was associated with the use of the gasoline motor.

The meter users formed a group with higher economic level, greater literacy, higher acceptance of urban ways of life, more frequent exposure to mass media, broader social contacts within the community, and greater use of credit facilities. Illiterate farmers might also be meter users, if their contacts with urban centers were extensive.

5. Acceptance of mushroom culture was a special case of agricultural innovation: a) as distinct from all other attitudes toward innovation, mushroom growers were not marked by their high positive attitudes toward mushroom culture; b) the investment in mushroom raising per se was less than the investment and risk required by other types of agricultural innovation.

6. The mushroom growers as a group distinct from non-mushroom growers were more literate and receptive of urban ways. Tilapia raisers were of a higher economic level and had greater community contacts than non-tilapia raisers.

7. An hypothesis was offered: that innovations differ in complexity and investment of effort required. The more complex presuppose greater investment, work, risk and postponement of returns; hence this complex kind requires greater motivation than the simpler ones such as mushroom raising.

8. Use of hospital and clinic facilities was more frequent among the literate, those exposed to mass media, those accepting of urban ways and those having greater contacts with the city. Unlike acceptors of agricultural innovations, users of modern medical facilities were not of a higher economic level than non-users and could not be clearly distinguished on the basis of breadth of contact within the community or use of credit facilities.

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7. I understand that, since the last war, there have been, around here, some introductions of new things in the field of rice farming, other farming, gardening, and fishing in order to raise production. What are these various new things? [177* 178* 125]

1.	Fertiliser	9	[241]
2.	Small engine	4	[402]
3.	New rice seeds	3	[243]
4.	Tilapia	98	[228]
5.	Other fish, specified	13	[244]
6.	Fish, unspecified	80	[235]
7.	Mushrooms	45	[231]
8.	Poultry	179	
9.	Pigs	21	
X.	Other, specify	68	
0.	Unascertainable	45	

8. Here, some farmers get a lot more rice from one rai of land than others get. Generally speaking, what are the various reasons why this is so? [243] [433]

1.	Fertiliser	59
2.	Skill of the farmer	63
3.	Quality of the soil	65
4.	Irrigation facilities	125
5.	Type of seed	17
6.	Other reason, specify	
		53

9.a. When was it more profitable for you to grow rice, this year just finished, or two or three years ago? [243] [434]

1.	This past year	131
2.	No difference	57
3.	2 or 3 years ago	62
4.	Unascertainable	25
—	Does not apply	58

b. If 2-3 years ago: If this is so, then it has become less profitable to grow rice. Such being the case, have you done anything to improve the income of your family?

7.	Yes	36
8.	No	25
9.	Unascertainable	1

c. If yes: what various things have you done?

5.	Nothing	4
6.	Mushrooms	6
7.	Poultry	8
8.	Fish (Incl. Tilapia)	5
9.	Fertiliser	
X.	Other, specify _____	15
Y.	Unascertainable	2

10.a. Do you own a small engine motor, or not? [402]

1.	Yes	70
2.	No	259
—	No Answer	4

125
[402] b. If no: have you ever made use of one in your work, or not?

3. Yes	115
4. No	106
5. Unascertainable	8

11. What is your opinion about fertilizer?
(See code at end)

[241] 12.a. IF R IS A FARMER: Have you ever used fertilizer or not?

6. Does not apply	17
7. Yes	31
8. No	232
— No Answer	12

b. IF HAS NOT USED FERTILIZER: For what various reasons have you not used fertilizer?
(See code at end)

c. IF HAS USED FERTILIZER: Have you ever used fertilizer in your seed-beds, or not?

9. Yes	20
X. No	13

d. IF HAS USED FERTILIZER: To what extent have you used fertilizer on your fields? On all your fields, or on the larger part of your fields, or on the smaller part of your fields?

1. On all fields	4
2. On larger part of fields	4
3. On minor part of fields	24
4. Unascertainable	1

13. What is your opinion about mushroom growing?
(See code at end)

[244] 14.a. Have you ever grown mushrooms, or not?

1. Yes	143
2. No	188
— No Answer	2

b. IF NO: Do you have any relatives or relative-like neighbors, who have grown mushrooms or not?

3. Yes	111
4. No	44
5. Unascertainable	4

15.a. What is your opinion about tilapia raising?

[228] b. Have you ever raised tilapia, or not?

1. Yes	104
2. No	225
— No Answer	4

45

16.a. ASK ONLY FARMERS: This year just now beginning, will you do anything for increasing your income, outside of rice farming? [125] [434]

3.	Does not apply	13
4.	Yes	162
5.	No	107
6.	Unascertainable	11

b. IF YES: What various things will you do? [224]

0.	Nothing	3
1.	Mushrooms	12 [235]
2.	Poultry	51
3.	Fish (Incl. tilapia)	10 [228]
4.	Fertilizer	2
5.	Other, specify _____	8 [241]
6.	Unascertainable	6

17. ASK ONLY FARMERS:

a. Last time you planted rice, how many rai of rice did you plant? [243] [483]

1.	4 rai or less	14
2.	5 to 9 rai	25
3.	10 to 19 rai	59
4.	20 to 29 rai	45
5.	30 to 39 rai	53
6.	40 to 49 rai	32
7.	50 to 59 rai	19
8.	60 to 69 rai	14
9.	70 to 79 rai	2
X.	90 rai or more	—
0.	Unascertainable	20

b. And what was the total yield?

1.	120 tang or less	15
2.	121 to 300 tang	28
3.	301 to 600 tang	59
4.	601 to 900 tang	59
5.	901 to 1200 tang	36
6.	1201 to 1500 tang	25
7.	1501 to 1800 tang	10
8.	1801 to 2100 tang	10
9.	2101 to 2700 tang	7
X.	2701 or more tang	3
0.	Unascertainable	21

c. How about the year before—how many rai did you plant?

1.	4 rai or less	14
2.	5 to 9 rai	19
3.	10 to 19 rai	51
4.	20 to 29 rai	47
5.	30 to 39 rai	53
6.	40 to 49 rai	26
7.	50 to 59 rai	20
8.	60 to 69 rai	13
9.	70 to 99 rai	5
X.	90 rai or more	—
0.	Unascertainable	23

52

125 [513] f. During the last year, did it occur to you frequently, sometimes, or never that you had a nightmare?

4. Frequently	16
5. Occasionally	120
6. Never	197

[546] 35. In your life, how many times have you seen a movie, or haven't you ever seen one?

5. Ten times and more	161
6. 4 to 9 times	60
7. 1 to 3 times	75
8. Never	33
— No Answer	4

[426] 36.a. Excuse me, I'd like to ask about a problem common in rural places all over the world. Do you now have a debt or not?

5. Yes	192
6. No	110
7. Unascertainable	1

b. IF YES: Is your debt now higher, or lower, or about the same as it was two years ago?

8. Higher	68
9. Lower	95
X. About the same	28
Y. Unascertainable	1

c. IF NO: Now about two years ago, did you have a debt then or not?

9. Yes	61
X. No	78
Y. Unascertainable	—
— No Answer	1

[441] 37.a. Do you or anybody in your household buy certain products in order to resell them at a profit?

9. Yes	85
X. No	242
Y. Unascertainable	3
— No Answer	4

b. IF YES: Do (you/they) sell things regularly, occasionally or just at festival times?

7. Regularly	31
8. Occasionally	49
9. Just at festival times	5
X. Unascertainable	—

[241] 38.a. And now, I would like to know a little more about fertiliser. Do you think fertiliser is very good, fairly good or bad?

1. Very good	106
2. Fairly good	149
3. Bad	15
4. Unascertainable	63

	Qu 11	Qu 12	Qu 13	
1. Positive, no evidence: very good, good, nice	103	114	77	125
2. Positive, with evidence: good results, specific statements	47	120	95	241 •
3. Neutral or mixed	11	20	6	244
4. Negative, no evidence: no good, bad, of no use	9	5	15	228
5. Negative, with evidence: difficult to apply in deep water, must keep using it, too expensive, some results as without fertiliser	33	13	80	
6. Positive, qualified: Fertiliser too expensive	13	—	1	
7. Positive, qualified otherwise: only for high land; very hard to purchase; requires to keep on using it	32	18	18	
8. Respondent states he has no opinion	54	31	26	
X. Negative, qualified: It's not quite good, it depends on the soil	4	4	3	
0. No answer	4	3	1	
9. Respondent's attitude not ascertainable	23	5	11	

Qu 12a		
0. D.A.	85	125
1. Too expensive	78	241
2. Difficult to purchase	15	
3. Not fit for low land	39	
4. Soil not suitable	3	
5. No ascertainable reason given	28	
6. Too little land	7	
7. Other reasons	56	
8. Have never used it before. Do not now either	12	
X. N.A.	105	
9.	21	

Qu 12b		
X. N.A. Unascertainable	60	125
0. D.A.	151	243
1. Nothing, cannot do anything	70	435
2. Grow mushrooms	12	458
3. Raise poultry	15	
4. Raise fish (including Tilapia	7	
5. Use fertiliser	—	
6. Find job as laborers	6	
7. Other: try to find new seed, sell vegetables, borrow money from neighbors, keep rice until price goes up, economise, send sons to work	86	

7: Janlekha X-4,5 (1948-1953)p956 AO7 Central Thai AO7
Bangchan

CHAPTER VI

FARM ORGANIZATION AND MANAGEMENT

*128 • 241 Broadly speaking, a farm is one or more tracts of land held or operated as a unit for the production of agricultural products.[1] The subject of farm organization and farm management is usually treated under the more general term "farm management". A recognition of the distinction between these two functions of the farm operator is necessary. Organization refers specifically to the function of creating the general scheme or plan of production, whereas management refers to the function of putting the scheme into operation and of making those adjustments in the business which are necessary in order to obtain the maximum economic returns from the farm business as a whole.[2]

*243 433 44 Limited Role of Bangchan Operators

1. Limited role in organization: Discussions in the preceding chapters have indicated that at the present stage of technological development Bangchan operators have really not much choice in creating the general scheme or

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1. H. C. M. Case and Paul E. Johnston, Principles of Farm Management, J. B. Lippincott Company, Chicago, 1953. pp. 466.

2. G. W. Forster, Farm Organization and Management (New York: Prentice-Hall, Inc., 1950), p. 19.